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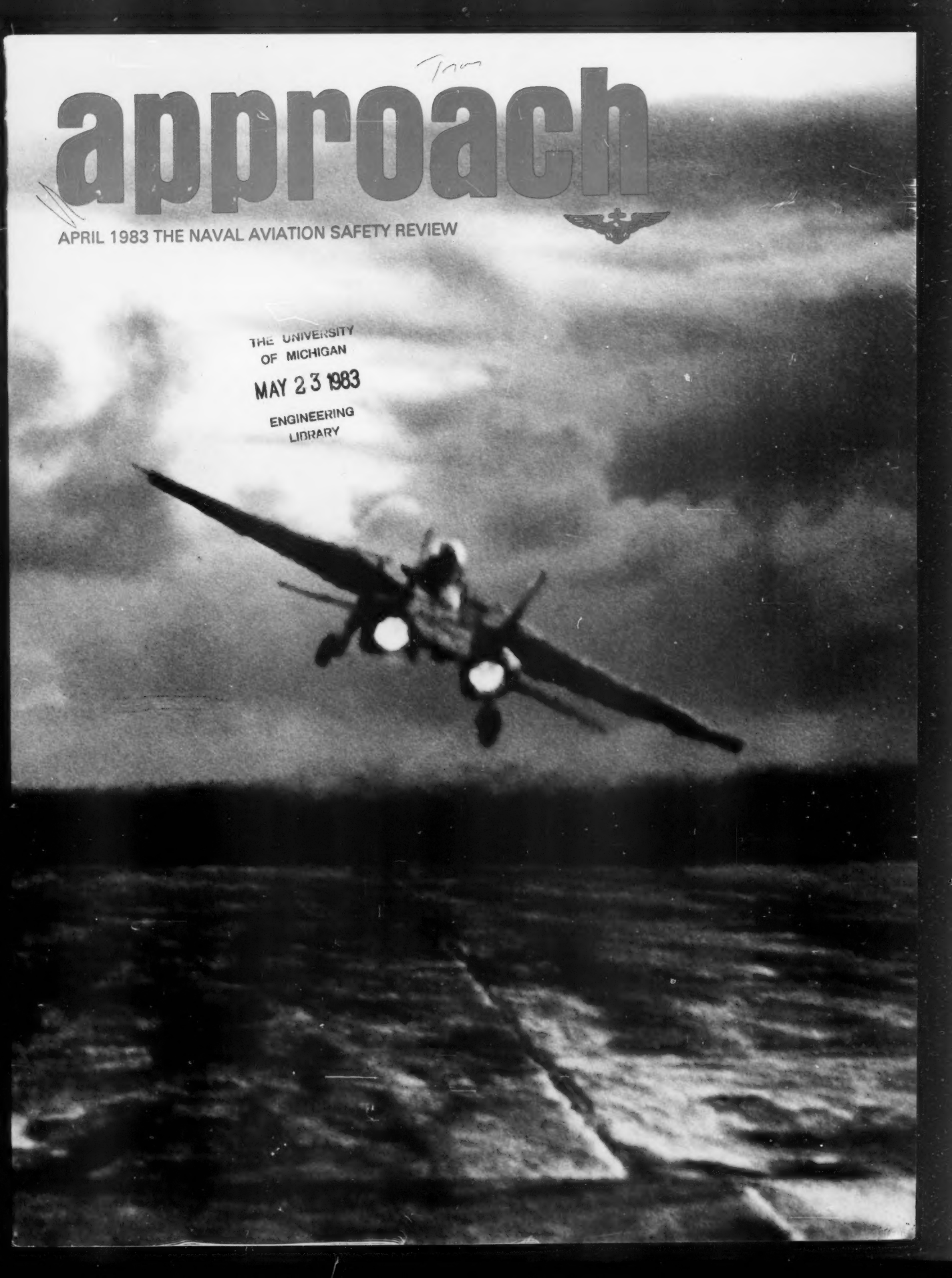

VFR or IFR, We Stick Together

Navy and Marine Corps fliers are, as the recruiting posters say, unique. Whether we're descending out of Angels 30, wriggling out of our flight jackets before the gate guards see us or biting into Dagwood sandwiches at lunch, there's no one else quite like us, and the fraternal order of Navy and Marine Corps aviators boasts some of the closest all-weather friendships the world has ever known. Right?

In that case, would you mind telling me how many of us there are? It's a simple enough question: How many fliers are there in the Navy and Marine Corps? Give it your best guess, and don't skip to the next paragraph to find out the answer.

You skipped! There are over 17,000 Navy/Marine Corps pilots and over 6,000 NFOs. There are more than 500 aviation maintenance officers and over 300 AEDOs. Enlisted aviation personnel? Over 146,000.

Was your guess within 1,000 of being correct? I'll bet!

It's funny, the little things you can pick up, even when you think you have a subject wired. That's why there are 32 more pages in this April issue of APPROACH. Now that you know how many of us there are, read on. You just might find some better ways to keep us alive!

LT Colin Sargent

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An F-14 Tomcat booms off the USS INDEPENDENCE in burner. Photo courtesy of USS INDEPENDENCE Photo Lab.

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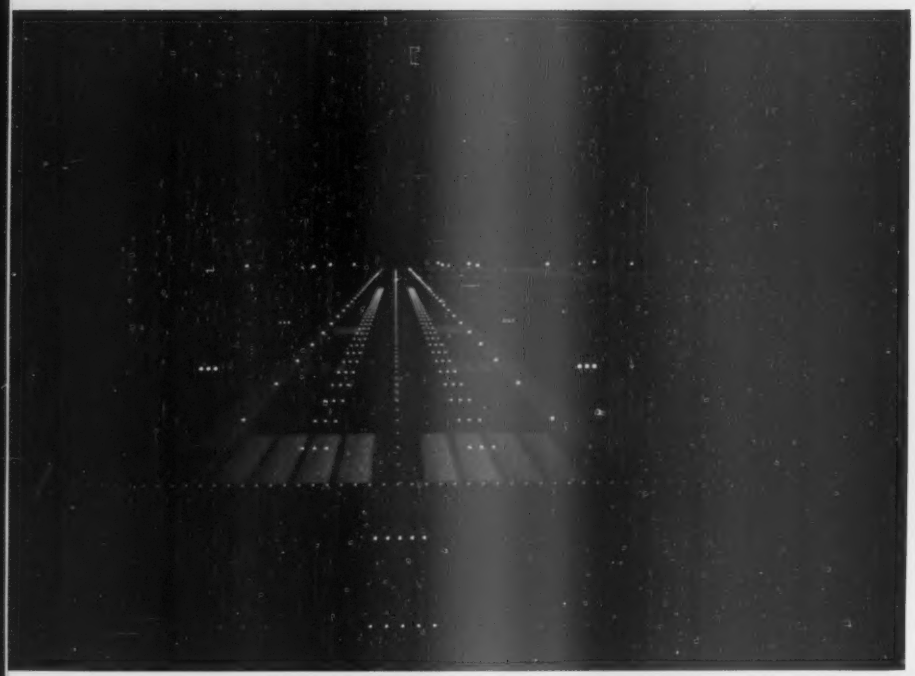
Are You Ready For This?

By Capt Dan Schultz USMC, HMH-464



You're on heading, on glidepath, one mile from touchdown. Your scan picks up the fluctuation of the No. 2 fuel indicator seconds before the unthinkable happens. A dual engine failure in IMC!

IT'S been a long flight back from Pensacola, but the weather's been almost perfect and the trip uneventful. In fact, you don't even notice the decrease in visibility at first.

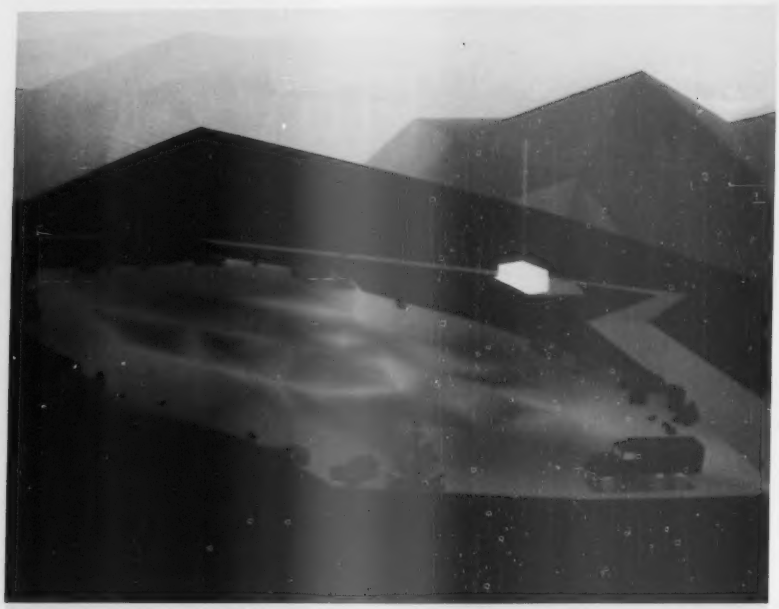
After a while, the clouds and haziness begin to build to solid IFR. No sweat; the transition to flying the gauges is smooth as you break out the approach plates for New River. You dial up Wilmington Approach, and Metro warns of embedded thunderstorms just minutes before the turbulence hits.

It's becoming more difficult now; the sudden updrafts and hard yawing moments force you to constantly fight vertigo. Then just when you appear to have control of the aircraft, the fuel filter bypass light illuminates, immediately followed by the distinct wind-down of the No. 1 engine.

Maintain N_r, speed control levers, airspeed, landing checklist and call Approach for vectors to Runway 5. New River GCA begins vectoring you for a PAR approach to Runway 5. You're on heading, on glidepath, one mile from touchdown. Your scan picks up the fluctuation of the No. 2 fuel indicator seconds before the unthinkable happens. A dual engine failure in IMC! Instincts take over now as you lower the collective, maintain N_r, break out at 200 feet, keep the runway lights in sight, flare, push the nose over, pull power and touch down.

You exceed touchdown limits — your sideward velocity is too great with a 1,500 fpm rate of descent . . .

Until you've flown a helicopter flight simulator with a computer-generated visual system integrated with a fully-articulating motion system, you can't appreciate what you're missing.



As you start to unstrap, you look at the instructor and say "That was a pretty rough landing; good thing I was strapped in. Let's try another one. Maybe I'll try my collective pull a little sooner." This scenario is repeated day and night, IMC and VMC, but not in the air and not at the cost of an aircraft or pilots.

Star Wars has finally come to the Marine Corps helicopter community, in the form of devices 2F117, 2F120, 2F121 — the CH-46E, CH-53E and CH-53D operational flight simulators. Yes, we've all had some experience with simulators in the past (Link trainers in Pensacola, etc. . . .), but until you've flown a helicopter flight simulator with a computer-generated visual system integrated with a fully-articulating motion system, you can't appreciate what you've been missing.

Simulators haven't been designed or bought by the Marine Corps to replace flight time. They're developed to increase pilot proficiency and currency, thereby getting more training value out of the time you actually spend in the air.

Simulators have been around for quite some time, but the complaints from pilots are always the same: *it doesn't feel or sound right.* This, compounded with the fact that visual systems weren't available, has made **simulator** a dirty word for pilots. However, because of giant leaps in technology and some long-range planning at Headquarters, the Marine Corps helicopter community will soon be receiving three state-of-the-art flight simulators, complete with computer-generated visual systems.

Capabilities of these devices include: formation flight, CALs (Confined Area Landings) and MALs (Mountainous Area Landings). Do day or night VMC and IMC approaches to LPHs, LHAs, LSTs and LPDs interest you? How about approaches and external pickups of A-6s, M-198s, 105s, 155s and bridge spans, not to mention adjustable cloud heights, visibility, turbulence, wind gusts and shears and just about every emergency possible with a corresponding aircraft response?

Whatever you used to think about simulators, forget it. **These are new, very expensive, highly technical and extremely realistic devices and they're coming your way.** So plan to use them and you'll be ready for anything.

To schedule your unit for some time in these simulators, contact Capt Dan SCHULTZ, HMH-464, MCAS(H), New River, NC, autovon 486-8184, commercial (919) 455-6148.

By the way, this program isn't limited to New River. New CH-46E and CH-53E simulators have arrived on the West Coast and will soon be whirring. Capt Schultz is the project manager nationwide for these Marine Corps helicopter simulators, and he'll be glad to fill you in on West Coast developments. — Ed. ◄

Why?

By Richard A. Eldridge
APPROACH Writer

MOMENTS after landing onboard a CV, a C-1A was getting ready to fly 140 miles back to shore. During the COD's hot turnaround, a new pilot jumped into the copilot's seat, but the pilot in command remained the same. Passengers strapped in while the ground crew performed the turnaround. Mission? To carry seven passengers to NAF Island for further transfer to new permanent duty stations.

The crew didn't file a flight plan. This may have been because the CV was operating under EMCON or because the replacement copilot thought that a flight plan was already on file since the flight was scheduled as a hot turnaround. Whatever the reason, the COD launched without one.

The two pilots had flown together many times before. Both were qualified NATOPS transport plane commanders in the C-1. In fact, the copilot was the carrier's C-1 NATOPS officer. The two fliers were also very familiar with the destination facility, each having operated out of there at least four times in the previous 30 days. Whether a flight brief was conducted in the cockpit is unknown. Considering the hectic pace generally associated with hot turnarounds, especially with a copilot switch, a brief would probably have been limited to the basic assignment of each pilot's responsibilities.

No weather brief was obtained, but since the plane commander had just flown the same route to the carrier in the previous hour, he knew what weather to expect on the return trip. Later, the copilot of the flight *to* the carrier said, "The weather throughout the flight was somewhat cloudy and very hazy. I estimate the forward flight visibility was three to five miles. We could easily see the ground and terrain all along NAS Island. Near the higher mountains on the island, the peaks were obscured and not visible."

After taking off, the pilots flew VFR along their route. Upon establishing contact with NAF Island tower, the copilot reported their position as 45 miles on the 100-degree radial at 1,500 feet. He reported again at 25 miles and requested that a fuel truck meet the C-1. A final report was made at 15 miles, at which time they rogered the tower's landing instructions. This was the last radio contact with the C-1. A SAR effort was initiated shortly thereafter.

Two days later, the wreckage of the COD was found on a steep coastal ridge at the 800-foot level of a 1,400-foot ridgeline. There were no survivors. Impact was made in a wings-level, 8 to 12 degrees noseup attitude at approximately 160 KIAS. Visibility at the 1,000-foot level of the ridge was 50 to 150 yards in fog.

At the impact area, the terrain rises from sea level to 1,400 feet in approximately 400 yards. The bottom third of the ridge rises gently in a 10-degree slope, increasing to 40 to 50 degrees to the 1,000-foot level, and then a near vertical cliff extends to the ridgeline at 1,400 feet.

It's now believed that the pilots descended below their reported 1,500 feet in an attempt to maintain VMC. About two minutes after the 15-mile DME report, they may have lost their TACAN lock-on because of terrain blanking. Navigation at that point would have been strictly by dead reckoning. After about one or two minutes, having not regained a TACAN lock-on and thinking their position was still over water, the pilots turned left toward the VMC conditions they knew existed. In a near-zero visibility situation, the crew didn't see the coastal ridgeline in time to avoid it. Whether they thought they were farther out to sea than they actually were or felt they could avoid the terrain by flying at 800 feet will never be known. **Questions concerning why they didn't turn right toward the open sea in order to avoid the mountains, climb and regain VMC or a TACAN lock-on will also remain unanswered.**

It appears that this is yet another instance of a mishap resulting from something that has contributed to the loss of many lives and naval aircraft over the years — attempting to fly VFR in IFR conditions. It won't work and it never has!

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The Correct Decision. The incident we're about to describe is far from dramatic, but it has an important message that's worthy of print.

A P-3C aircraft was conducting an operational flight when the patrol plane commander (PPC) noted increasing intestinal discomfort along with a fever and chills. Because of his physical condition, the PPC elected to turn control of the *Orion* over to his fully qualified second and third pilots (PP2P, PP3P) for immediate return to home base and a subsequent landing. Upon arrival at Homebase, medical assistance was requested for the PPC. He was admitted to the naval hospital and treated for gastroentritis and dehydration and was in a down status for 96 hours.

Although the PPC was not incapacitated, he decided not to test his physical condition since he had two fully qualified P-3C pilots in his crew. He made the **correct decision** by turning control of the aircraft over to them.

This is that important message: Plane commanders of multipiloted aircraft owe it to their crew and themselves to ensure that during flight they (PPCs) are physically up to flying their aircraft. In this incident, the plane commander was completely confident that his backup pilots could do the job and he rightfully let them do it. This is nothing less than a small part of professionalism at its best.

A Daring Helo Mission. It was 1630 last 23 November when VC-1's SDO heard the telephone ring. The Joint Rescue Coordination Center was on the line, requesting a search and rescue mission in support of USS GOLDSBOROUGH (DDG 20).

While steaming away from Oahu to escape hurricane Iwa, the DDG had been hit by a 30-foot wave. The wave had killed one sailor, swept a second overboard and badly injured three others.

Instantly, VC-1's SH-3G search and rescue crew prepared to launch in winds of 30 to 35 knots, gusting to 45 knots and increasing as the storm approached.

By the time the *Sea King* lifted off, darkness was fast approaching, and driving rains from the storm had reduced visibility to a mile or less.

With Dr. John H. Wilckens, a flight surgeon from Barbers Point Medical Clinic, aboard to assist, the HAC, LCDR David Duval, headed for the GOLDSBOROUGH, which was now steaming in stormy seas one and one-half miles south of Honolulu International Airport's reef runway.

In the darkness, with winds of 50 knots and seas of 20 to 25 feet, LCDR Duval maneuvered carefully over the violently pitching and rolling deck of the GOLDSBOROUGH.

This DDG isn't equipped for landing helicopters and has an unlighted vertical replenishment area that's certified for daylight transfers only.

With winds buffeting the helicopter and waves pitching and rolling the steaming ship, LCDR Duval said later that he was extremely tense during the entire hover because of the danger of the helo hitting the superstructure.

LT Dan Corritore, the copilot, coordinated communications and kept watch to ensure clearance between the helicopter and the DDG's radar and radio antennas.

Meanwhile, AE2 Stephen Williams and AMS3 Namie Bacile lowered Dr. Wilckens toward the pitching deck. It seemed to take forever for him to touch down, but in the end, he made it safely.

The air search for the man overboard began immediately afterwards, in transient zero visibility conditions. The search continued for over an hour until it was reported that the man had made it to shore.

After some fast work in sick bay, Dr. Wilckens reported that the injured men were in stable condition and could make it through the night.

The helicopter's return to base was also extremely hazardous, with winds of 60 knots blowing at NAS Barbers Point.

But three lives had been saved and several other injured personnel had receive necessary medical attention. For their courageous and self-sacrificing actions, ADM S. R. Foley, Commander in Chief, U.S. Pacific Fleet, presented Air Medals to the VC-1 helo crewmembers and Dr. Wilckens.

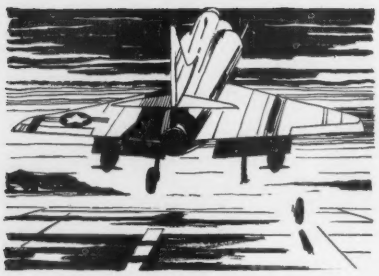
Safe-T-Line. It's always a pleasure to award Attaboys to some of our enlisted aviation personnel for their superior awareness and quick thinking. In this instance, three pairs of eyes detected a hazardous situation and took immediate action to make it known. This is the way it went:

An A-4 *Skyhawk*, call sign Ranger 41, departed Naval Air Facility Washington at 1827Z on 31 December 1982. The aircraft was on a stopover flight plan from Dallas, Texas to Glenview, Illinois.

Shortly after takeoff, three members of the NAF Transient Line, AE1 John George, AE3 Dave Brown and AE3 Ben Ling, observed a tire rolling into a grassy area adjacent to the NAF line.

Petty Officers Brown and Ling went to search the area and found a mainmount tire and wheel assembly, which had dropped off the A-4 during

AIR BREAKS



takeoff. They then notified the NAF ATC desk, which relayed the word to Ranger 41. The pilot diverted to NAS Willow Grove, PA, where he made a wheels-up landing on the *Skyhawk's* wing tanks.

Petty Officers George, Brown and Ling are to be commended for taking the proper action after observing a real hazard. Well deserved Attaboys go to all three.

Distracted ASO. Coming back from two no-fly days followed by an RON to the beach and two more no-fly days at the tail end of a long and busy line period, an S-3 crew strapped in as the manned spare for the last CV event of the night. The Aviation Safety Officer was in the left seat (with the words from his latest complacency lecture still hanging in the air . . .).

An A-7E was parked to the left of the S-3, while an E-2C was parked close aboard on the right (copilot's) side.

During preflight, one of the gust lock pins for the *Viking's* port wing was discovered out. Because of this, a troubleshooter was told to stand by in case the pin didn't retract when the No. 1 hydraulic system came on the line.

The No. 1 engine started uneventfully. While the after-start checks were in progress, there was a comment in the cockpit about how rusty a few days off could make a person.

The gust lock pin did not retract by itself, and the troubleshooter came into the cockpit to ask the pilot to cycle the wing fold and gust lock. Hindsight shows that there was some confusion between the pilot and the troubleshooter.

Not entirely clear on what the troubleshooter had asked him to do, the pilot made two mistakes by 1) not clearing up the confusion; and 2) initiating what he assumed the troubleshooter wanted . . . actuating the wing spread (fully intending to stop it momentarily after the wings started to move). The pilot, looking at the troubleshooters standing by the left wing, became distracted as the wings continued to spread. The copilot, aware of the rapidly deteriorating situation, alerted the distracted pilot to the impending disaster, reached over and pulled the gust lock "up" to stop the wings.

The now attentive pilot hit the wingfold switch back to "fold" and the starboard wing missed the E-2C by less than a foot.

Lessons learned from this incident include: wing spreading must be under the positive control of a plane captain and yellow shirt to preclude unintentional spread on adjacent aircraft; troubleshooters do not have authority to direct spreads, only request them; clarity of communication is paramount. When confusion exists, do not proceed; distraction from the task at hand can happen at any time to anyone, even Aviation Safety Officers.

Submitted by
LT Bruce W. Kirchenheiter
ASO VS-37

A FINAL APPROACH

By Richard A. Eldridge
APPROACH Writer

THE A-7E appeared to be slightly low coming through the 90-degree position, but had a normal attitude and angle of bank. It was a day recovery, and the pilot had trapped on his previous approach in a "run-the-deck" evolution. From the 60-degree through the 45-degree position, the angle of bank (AOB) began increasing, altitude remained slightly low and aircraft attitude appeared normal. Between the 45-degree position and the groove, the *Corsair's* AOB increased dangerously to nearly 90 degrees and the nose dropped rapidly. Immediately the backup LSO transmitted, "Pull up, pull up." The A-7's wings appeared to level, but there was a definite pitch to 30-degrees nose up and a wallowing, yawing wing rock, followed by a visible increase in sink rate. Altitude was between 100 and 150 feet. Suddenly, the left wing rolled abruptly to an 80- to 90-degree wing-down attitude, which again increased the sink rate drastically. The stabilator position indicated full aft stick.

As the left wing started to drop, the backup LSO transmitted several commands to eject. The seat departed the aircraft with the left wing nearly 90 degrees down and the aircraft nose position about 15 degrees down. Estimates of the ejection altitude varied from 50 to 100 feet.

Shortly after ejection, seat/man separation occurred. The parachute deployed partially and streamed just prior to water impact. A SAR helo was on the scene approximately one minute after the ejection, and the rescue swimmer entered the water immediately. The pilot was floating partially face down in the water. Some difficulty was experienced in releasing the Koch fittings and the entangled chute. In spite of this, scant minutes after the helo arrived on scene, the pilot was lifted into the aircraft. No vital signs were evident during the rescue evolution. CPR was started as soon as the pilot was aboard the helo, and despite generating a femoral pulse, resuscitation attempts were unsuccessful even though they were continued for some time after the helo landed aboard the carrier. Approximately one hour and 30 minutes after the crash, the pilot was pronounced dead. Cause of death was determined to be asphyxiation due to drowning. From a thorough analysis of the ejection sequence, it was determined that the ejection was well outside the safe ejection envelope.

The pilot was known to be a slow learner and had been under very close observation since reporting to the squadron (due to his carrier landing performance, particularly at night).

During flight training, the pilot's flight and academic scores had been below average. He had been referred for board action on four occasions, once in the intermediate phase and three times in advanced. Three of the actions were related to flight ability and one to academic difficulties. The first two board actions resulted in recommendations to continue flight training. The third board, convened because of an unsatisfactory airways navigation training flight, voted unanimously to terminate the pilot's flight training. At the TRAWING level, the board's decision was reversed and the pilot's flight training was continued.

His flight grades were below squadron grade average in all phases of training except air combat maneuvering. The training squadron CO commented that he was slow to catch on to the program. He experienced great difficulty in instruments, formation and tactical formation stages.

He completed his RAG training in the A-7. The RTS Pilot Flight Evaluation Report indicated that he completed the syllabus with average grades in all phases except tactics and electronics warfare (above average) and carrier qualification (below average). However, the Replacement Pilot Record Review, an enclosure to the RTS report, differed markedly from the basic report. It stated that the pilot received substantially below average grades in familiarization, instruments, Weapons I and CQ stages. The CO's remarks stated that he was a little behind the aircraft at times, willing to accept flight conditions as they existed prior to touchdown rather than correcting all the way and waiting too long to correct.

The record did show that he had demonstrated great improvement and a complete attitude change after consulting with the flight surgeon. There was no record of board action in the RAG.

In the seven months he'd been in the squadron, he'd exhibited satisfactory performance in all flight phases except carrier landings. Both the CO and Air Wing Commander had kept close tabs on his performance as a result of his RTS record. During each of five at-sea periods, his performance trend was well below that expected for his experience level. By the completion of each period, however, his performance slowly had improved to an acceptable level.

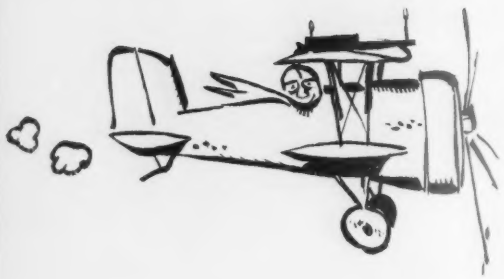
About one week before the mishap, the pilot suffered a particularly bad night of flying. He boltered three times, failed to tank successfully from a KA-6, managed to tank from an A-7 and then landed aboard without incident. Later that night, the CAG LSO recommended to the squadron CO that the pilot be grounded from flying from the carrier. This was based on the LSO's observation of the pilot's past performance and his performance on that particular night. However, the CO opted to allow the pilot to continue to fly off the carrier.

The maneuver which led to the mishap was an approach turn stall rather than a carrier landing. An unintentional

approach turn stall during day VFR conditions is a rarity and something that is not predictable. It is an elementary mistake, and the mishap pilot had shown no previous inclination toward such an error. A considered decision was made to continue flying the pilot under close supervision. Although the pilot had a recognized problem, supervisors felt that he had the potential to become a competent fleet aviator.

On the afternoon of the mishap, the squadron flight surgeon was visited by two close friends of the deceased pilot, who identified themselves as "confidants." They informed the flight surgeon that the pilot had an anxiety and fear of landing the A-7 aboard the carrier. The two individuals were from outside the squadron, and neither the flight surgeon nor members of the pilot's squadron were aware of this information prior to the mishap. Basis for the pilot's anxiety was said to be his lack of confidence in the TF-41 engine's "spool-up" time and its capability to recover from a low/slow approach condition. This fact, with the benefit of hindsight, could explain the regressive nature of his landing abilities between deployments, inconsistency in FCLP and his slow progress in landing performance aboard the carrier. His anxiety and apprehension could have adversely affected his headwork, basic airwork and reactions in the landing pattern to the extent that he did not recognize an incipient stall until too late for positive corrective action.

One recommendation was that squadron and air wing commanders brief their flight crews and flight surgeons regarding the absolute necessity to bring potentially critical information affecting flight crew performance, mental attitude and personal well-being to the immediate attention of medical or supervisory personnel. This would allow a valid, unbiased assessment of an individual's potential for continued safe performance to be made in a nonpunitive environment. ◄



WAR

EVER wonder why the events that make a good war story happen? In most combat flying, stories come about because someone's shooting back, which is expected. But what about peacetime, in the controlled training environment? Not much shooting goes on, at least with real bullets. So how do the events that make a good war story come to pass? "Did you hear what happened to old 'ACE-IP' today? Boy he was lucky . . ." So the story begins.

There's an old saying that there's a fine line between an "Awshucks" and an "Attaboy." Some days everything goes perfectly: You brush that line and come out smelling like a rose, with a good war story. Then, other days, everything isn't quite perfect — that fine line is crossed, and someone's looking to rip your lips off.

Where is that fine line? That's a very hard question to answer. It's fluid, much like mercury used in thermometers. You ever try to pick that stuff up? It's elusive. The line moves; it's very dependent on individual experience, capability and the conditions at the time it's approached. As IPs, it's part of our job to know where that line is and never to cross it.

That's all well and good; but if I can't define it or get a hold of it, what good is it, and how can I prevent crossing it? The best answer I can offer is experience. Believe it or not, that's why only highly experienced and qualified pilots should become IPs. Experience coupled with ability helps an individual to develop the sixth sense to know when he's approaching that magical line. Ability and experience in flying aircraft is something that's generally not lacking among instructor pilots. Gaining experience with students is an ongoing thing and something none of us will ever get enough of. Just as sure as the world turns, when you think you've seen it all, someone will show you a new way to do a hi yo-yo, an approach to landing or a new formation wing position.

How do you survive until you've had time to develop that sixth sense? The same way you got your flying experience — either by being lucky or by being semiconservative. The biggest difference between gaining your own experience as a pilot and flying as an IP is that you had better control over your own situation as a pilot. You knew your capabilities and what was going on in your mind. Ever heard, "I tried to stop him, but he did it before I realized he was going to?" I believe I can safely say that no one will know completely what someone else is thinking, especially in our business. It's far easier to know what a student is not thinking than what he is. If the airspeed is going berserk, you can bet he's not thinking about airspeed. If airspeed is important, who really cares what he was thinking as long as he gets his mind back to what is important? That's the job of the instructor; to teach him what is and isn't important and how to make it work right.

What then causes most IPs to get on the back side of the magical line? I believe there are several

STORIES

By LTC James H. Wood, USAF

reasons. First, overconfidence and inattention to details. Overconfidence in either himself or the student will cause a relaxing on the IP's part which can result in inattentiveness. Ever wonder why the statement "the most dangerous aircraft is one in which two IPs are flying together" was made? Overconfidence.

The second reason is the approach, or method of training. The spectrum goes from total trial and error to a style that only allows perfection. The optimum point of teaching, I believe, is somewhere in between, and most of us use a combination. We demonstrate maneuvers and watch the student's attempt at duplication. The philosophy that a student learns by his errors is true; however, that can be a very expensive and time-consuming method of learning. Pure trial and error started going out the window when man first began communicating and passing on his experiences. This is why and how the IP comes into play.

The question that comes up is: At what point do I as an IP pass on my experience? The tendency to let the student experience the results or recognize and correct his mistakes has probably caused more gray hair (check mine after 2,000 hours IP time) among IPs than anything else. The question is: How far can I let him go? If I take the aircraft early, he may have recognized and corrected the situation by himself. All the while that magical fine line is rapidly being approached. On the other hand, what learning is produced by flying around in ignorance? Ignorance is bliss, right? I don't think so.

I don't have the answer for every situation because they are all different, but here are a few helpful hints. As a hard rule, I don't trust anyone when it comes to flying an aircraft that I'm responsible for.

Next, I divide all phases of flight into two categories: critical and noncritical. This is where ability comes into play. Any time I must take immediate action to prevent an accident or dangerous situation from developing, time is critical. Therefore, I am very close to the stick. I don't ride the flight controls because that is very annoying to the other jock, no matter how light you think you are on the stick; but I'm only a gnat's hair away. For example, you'll never see me in close formation with my arm resting on the canopy rail, no matter who is flying. Same way on final approach, even if it is the third one and everything up to that point has been wired. What I use as a guide is the amount of time I have to react if something unforeseen happens. Hardware failures are hard to anticipate. However, think of the worst case that could happen in the situation, determine the amount of time necessary for you to react and that is how close you need to guard. If your reaction time required is less than a nanosecond, you're across the magical line, and it's time to exercise your IP prerogative and do something.

Lastly, don't assume anything.

— from *TAC ATTACK*

LCDR Dave Burlin
LTJG Bill Davis
VA-85

A NIGHT KA-6D tanker flight during "no divert" Indian Ocean operations aboard USS FORRESTAL quickly became a thriller for LCDR Dave Burlin, pilot, and LTJG Bill Davis, B/N, of VA-85 as they began to dirty up for a night approach and carrier landing. Descending from 4,000 feet to 1,200 feet, LCDR Burlin lowered the flaps, slats and landing gear at 230 KIAS and immediately experienced an abrupt, uncommanded, right-wing-down, noseup excursion. Suspecting an asymmetrical flap configuration, LCDR Burlin countered the uncommanded maneuver and raised the flaps, slats and landing gear while climbing to 5,000 feet above the carrier. LTJG Davis informed the CV of the problem and requested a visual check. Another airborne KA-6D crew confirmed that, yes, their starboard outboard flap was missing.

In accordance with NATOPS, the flight crew prepared for a slats-down, no-flap approach at minimum gross weight. Aircraft controllability during slow flight and waveoff capability were adequate, with optimum angle of attack equating to an approach speed of 145 KIAS. A moderate amount of cross control was needed to maintain level flight.

As the flight crew set up for the final approach, the combined hydraulic system failed and wingtip speedbrake capability was lost. The first approach resulted in a bolter, and because of his low fuel state, LCDR Burlin was directed to tank.

Next, while climbing to rendezvous with the KA-6D tanker, his left generator failed and the external lights went out. Tanking was accomplished with flaps, slats and gear down. After tanking, the generator was successfully reset. LCDR Burlin and LTJG Davis then began a second approach, which resulted in a flawless OK arrestment.

The crew coordination and sharp airmanship displayed by LCDR Burlin and LTJG Davis in an *extremis* situation, when confronted by multiple emergencies during blue water operations, contributed directly to the safe recovery of a valuable fleet asset and the flight crew.

LCDR Dave S. Burlin (left),
LTJG William C. Davis (right).

BRAVO ZULU

Capt Steve Johnson
1stLt John Landis
Cpl D. A. Lopez
HMH-361

THE crew of a CH-53 was returning to MCAS(H) Futema from an area fam flight. The HAC, 1stLt John Landis, made a touch-and-go landing and then relinquished control on the downwind leg to the copilot, Capt Steve Johnson. On short final, Capt Johnson angled off the duty runway for his approach to the helo spot. In doing this, he commenced a right pedal turn to align the helo with the taxiway. The aircraft came over the spot in a left slide with the nose rotating right. Cyclic was applied, and the helo transitioned to a 25-foot hover, but the right rotation didn't stop, even with full left rudder.

After two rapid 360-degree turns, the HAC took control and diagnosed the problem as one of control authority rather than loss of tail rotor drive. He increased collective to gain altitude and then decreased it in an attempt to slow or stop the rotation. At the HAC's request, Capt Johnson secured the AFCS, to no avail.

During this time, the altitude varied from near touchdown to 800 feet, with the aircraft continually rotating to the right, inscribing an elliptical course of ever-increasing size over the ground. By the time the helo had drifted 1,000 feet downwind, 1stLt Landis transitioned to forward flight to regain control. As forward speed was regained, rudder control returned and a run-on landing was made on the runway.

Postflight inspection of the flight control rigging revealed tail rotor control tension to be six pounds below minimum and maximum tail rotor pitch to be five degrees too low.

The aircrew's cool evaluation of the emergency and deliberate decision to "fly the aircraft first" resulted in saving an aircraft and crew. Superb flight discipline overcame the natural instinct to get the aircraft on deck immediately. ◄

Cpl D. A. Lopez (left),
1stLt John Landis (center),
Capt Steve Johnson (right).

"The mission commander may exercise command over a single naval aircraft or formations of naval aircraft. He shall be **responsible** for all phases of the assigned mission except those aspects of safety of flight which are related to the physical control of the aircraft and fall within the prerogatives of the pilot in command . . . The mission commander shall direct a coordinated plan of action and shall be responsible for effectiveness of the mission."

— OPNAVINST 3710.7K

So You Want to Be a Mission Commander?

By LCDR Frank H. Brown
VF-114

PRETTY heavy stuff, eh? It seems to lean a lot on responsibility, but you're ready. You've been a hard charger for a couple of years now and feel that you have a good handle on your warfare speciality. Mission commander (MC) is a goal toward which all pilots and NFOs can strive, and like aircraft commander and flight leader (section or division), it encompasses all aspects of airmanship, tactics and experience. In this regard, you feel you're a responsible individual and ready for this designation. But wait a minute, there's more. It says in NATOPS that a mission commander shall be a NATOPS-qualified pilot or NFO, qualified in all phases of the assigned mission.

Okay, you're ready for the responsibility stuff, but now you have to be qualified. This means show some know-how. You have to be able to do more than spit out boldface forwards and backwards and recite limitations like your own rank, birth date and serial number. To be qualified, you must demonstrate your proficiency in effectively employing the aircraft and its weapons systems. Further, you must be able to successfully operate these systems in all phases of flight and all missions (including degraded flight systems and conditions). Exposure to inflight emergencies, sudden changes in tactical situations, weather and flight composition all help develop the prospective mission commander toward being recognized as *qualified.* This, of course, requires time.

In most squadron standard operating procedures, minimum time requirements are delineated to enable the prospective mission commander the opportunity to develop and demonstrate his abilities. The squadron instructions further describe responsibilities in briefings, conduct of flights, training skills and the reporting of breaches in flight discipline.

So, the groundwork is laid as to what being a mission commander encompasses. How does this relate to you? How does the mission commander board make its recommendations to your skipper?

Put yourself in the board's position. What qualities and motivation do you possess? Confidence, the desire to take the lead, the preparation and thoroughness of your flight brief. All are evaluated. Are the lectures you give polished and well prepared? How do you handle stressful situations? Maturity, performance on the job, flexibility, watch standing, handling of constructive criticism, discipline and responses to "what ifs" during hangar talk make up some of the board's evaluation. How do you accept responsibility? Do you readily accept the burden of making timely decisions? *All* facets of the professional naval aviator/flight officer are scrutinized. Quite often there is a corollary between airborne leadership and leadership demonstrated on the ground. It relates to the "whole man" concept.

Once you're selected for mission commander, you obviously

still have room to grow. It's axiomatic in naval aviation that if you aren't learning something in every flight, you're not paying attention to what you're doing. Sometimes a new mission commander is selected with this growth in mind. By being placed in a mission commander role, you'll be forced to iron out the rough edges of your flight leadership. You'll be considered *qualified* yet constantly tested to meet the *responsibilities* of this designation, with time and experience to round you out. Some areas that will test the new mission commander are:

- How do you handle an unbriefed situation in the air?
- Are you ready for any emergency situation that may arise within the section/formation?
- Your controlling agency is not up to par, and for the last 0 + 20 you've been providing TACAN cuts and recycling the IFF, but you're still unable to get on with the mission. Your frustration is at a new high. How's your comm discipline now?
- Where is your wingie? Is he where he's supposed to be for this phase of flight? How was the flight discipline briefed, or was it?
- Do you fully cover secondary and tertiary missions in your briefs? How is your crew doing in mission quals?
- Do you fly what was briefed?
- Do you demonstrate/exercise any ingenuity in tactical training (snapshot drills, combat-formation manuevers, lookout drills, etc.) to and from the mission area?
- Do you debrief the hop? Do you call it as it actually happened? Remember, much of the learning comes from the debrief.
- Do you know the difference between being professional and sierra hotel?

A lot has been covered concerning the makeup of a mission commander. Regardless of how many flight hours you have, the skill you demonstrate while airborne or knowledge you display on the ground, the sky-blue fact remains that the commanding officer must designate each and every one of his mission commanders. This designation signifies that you have earned a very important attribute — **trust**. This means that when he designates you a mission commander, your skipper is assured that the flight evolutions you'll conduct will be thoroughly briefed, professionally executed and effectively debriefed, whether your name is designated on the flight schedule as MC or not. The mission commander takes responsibility for decisions made for the entire flight — from brief to debrief.

So get *qualified.* Demonstrate your capacity for greater *responsibilities* and be polished in everything you do. Earn the trust commensurate with the mission commander prerequisites. Mission commander is a lofty goal. Those who have achieved it do not take it lightly, and neither does the commanding officer who awards it. ◄

X-Winged *Tomcat*

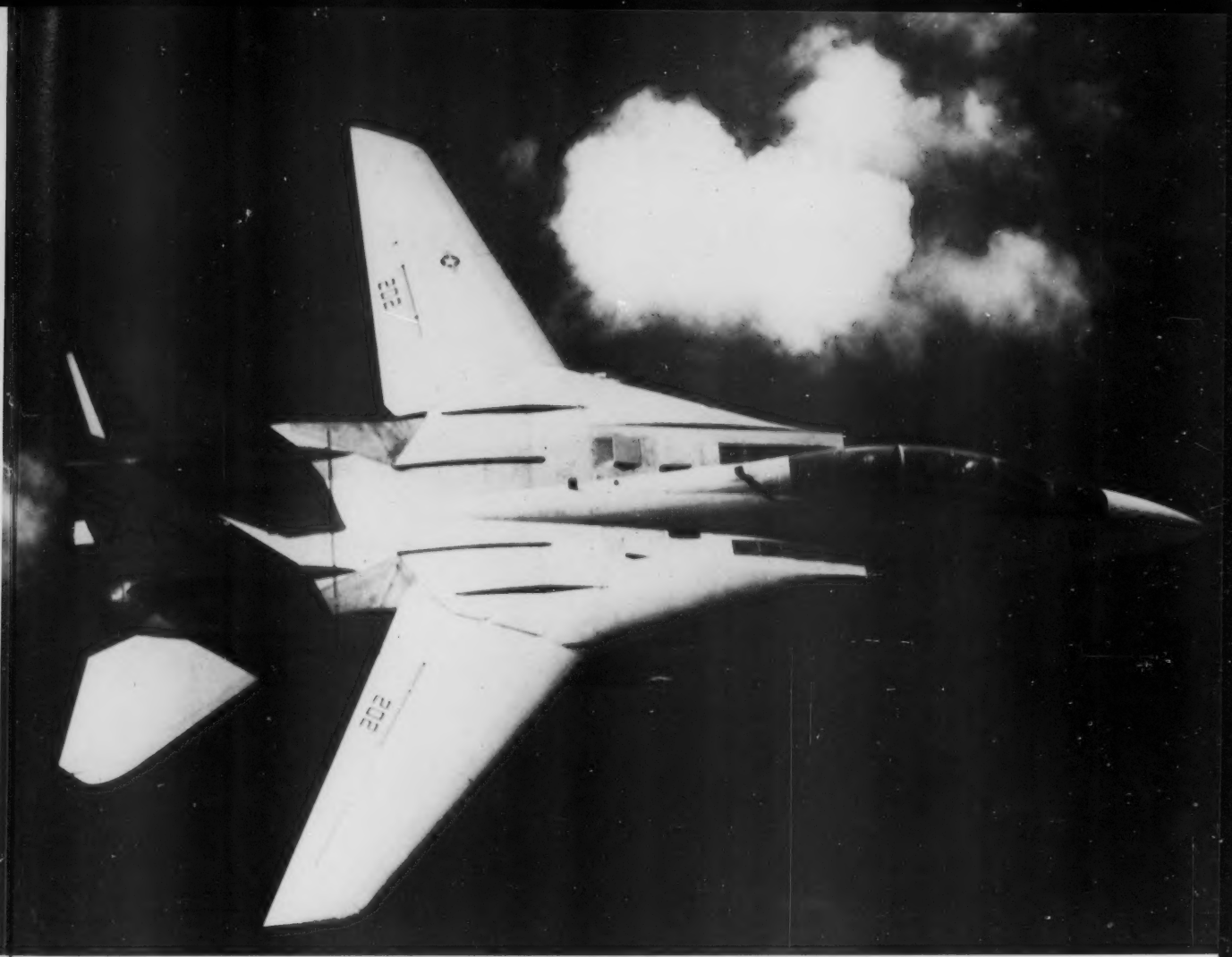
By LT Len VanMeter
VF-33

NAVAL aviators pride themselves in being able to handle time-critical emergencies. That's what flight pay's all about — that, and night traps. But how many aviators know the inner workings of their various aircraft systems well enough to handle a situation that's totally new, not addressed in NATOPS, one that can't happen? Try F-14 asymmetric wingsweep!

Tomcat 202 launched during CAVU blue water ops (nearest divert 1,000 nm) for an extended Gridex against air wing raiders. The hop included high-speed intercepts with mild maneuvering up to 4G.
16 Upon return to base (RTB), the pilot noted a wingsweep advisory light. Not only that, he needed considerable left-wing down trim to maintain level flight. Decelerating to 250 KIAS at 20,000 feet, he realized his wingsweep indicator was at 35 degrees (the normal position for that airspeed and altitude is 20 degrees). The flier also saw that the right wing was swept aft more than the left wing. A visual check by the wingman verified that the right wing was positioned at approximately 35 degrees and the left wing at 20 degrees.

All modes of wingsweep were tried, but the right wing would not sweep forward of 35 degrees. Even when the wings were swept aft, they maintained the 15-degree split.

A controllability check was performed. The main flaps would not lower normally. The calculated approach speed with maneuvering flaps was 165 KIAS for 49,000 pounds gross weight, requiring in excess of 50 knots of wind over the deck! With no divert available, the crew decided to remove asymmetry protection for the flaps by pulling (RE2) flap/slat control shutoff circuit breakers. The aux flap control



circuit breaker (7G3) was also pulled as a precaution against asymmetric aux flaps. By gently moving the flap handle, the pilot lowered the flaps in small increments to approximately 25 degrees. This resulted in a 153-KIAS approach speed for 47,000 pounds gross weight with actual weight setting on the arresting gear. A more feasible 32 knots of wind over the deck was required, so the decision to bring the X-winged fighter aboard was made.

Due to lateral control difficulties, no more than two-thirds flaps were used. Stick forces required considerable left-wing down trim, resulting in only one and one-half inches of left stick available for lateral control. Also, the overtravel protection was removed with the RE2 CBs pulled. The pilot flew a flawless straight-in approach to an OK — three wire! ◄

P-3 and C-130 Engine-Out Landing Techniques

By LCDR J. J. Miller
VXE-6

ENGINE-OUT landings are never routine. They're emergency procedures and must be treated as such. The NATOPS programs for both the P-3 and C-130 communities require pilots to demonstrate sound engine-out landing techniques. Here's some information, beyond NATOPS, that I hope will help you prepare for engine-out landings now — on the ground — before your engines fail!

The worst possible case for an engine-out landing is to have two engines out on the same side when landing on a short runway. Here the pucker factor is high, even for veterans. The P-3 NATOPS mentions full use of all available flight controls to maintain runway centerline during rollout reversal. Let's look at each of those flight controls and examine how to use them to maintain the runway centerline and minimize the landing ground roll.

In considering each control surface, a no-wind or wind-down-the-runway condition must be assumed. Crosswinds change the optimum control inputs. The amount of change is totally dependent upon the magnitude and angle of the crosswind. Remember, the airplane will tend to weathercock toward the crosswind because of the wind acting on the vertical stabilizer (Fig. 1). This tendency, coupled with

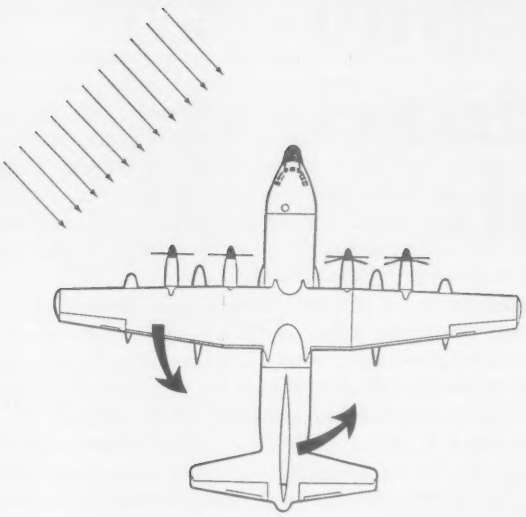


Fig. 1

asymmetric reverse, can create a severe swerve. Be prepared, and if possible, choose a runway where crosswind can be used to counter the asymmetric reverse-swerve tendency.

Use **rudders** as necessary to maintain the runway centerline throughout the landing. *Rudder trim, on the other hand, poses a unique problem.* During the approach, it's very likely that a large amount of trim will be used to assist in maintaining balanced flight due to the high power setting. In the case of two engines out on the same side, it may require full trim (Fig. 2). If that trim setting is sustained and is present during the flare and touchdown, it will eventually become adverse trim. When the operating engines are at

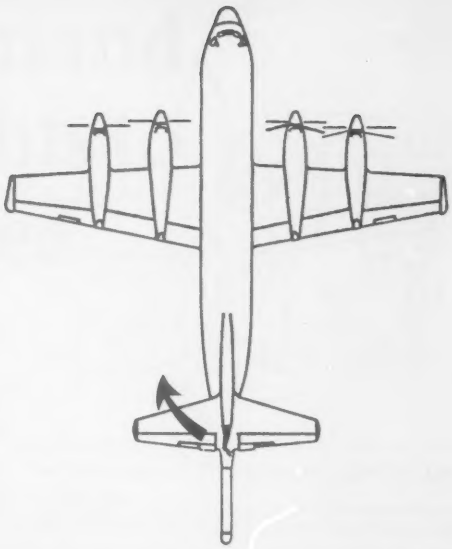


Fig. 3

zero or near-zero thrust, the trim is no longer necessary since there now exists an essentially symmetric power relationship among all engines.

A yawing moment will be produced by this trim setting (Fig. 3). A rudder input from the pilot is now required in order to maintain the centerline. This rudder input is needed only because an unnecessary trim setting is present. During the reversal, this trim setting has a different effect. As the operating engines are brought into reverse, the trim directly opposes the rudder inputs necessary to maintain centerline (Fig. 4). This has both a positive and negative result. On the negative side, more force is required on the rudder in order

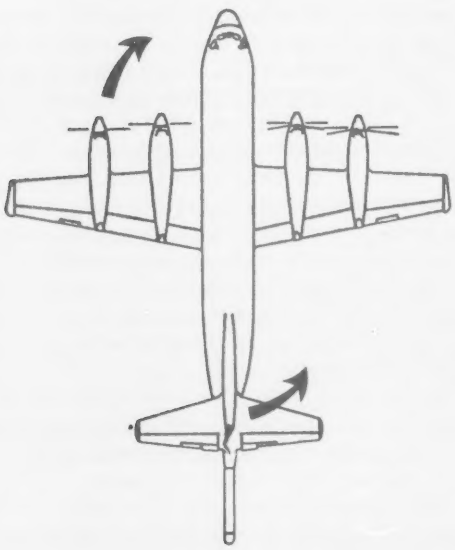


Fig. 2

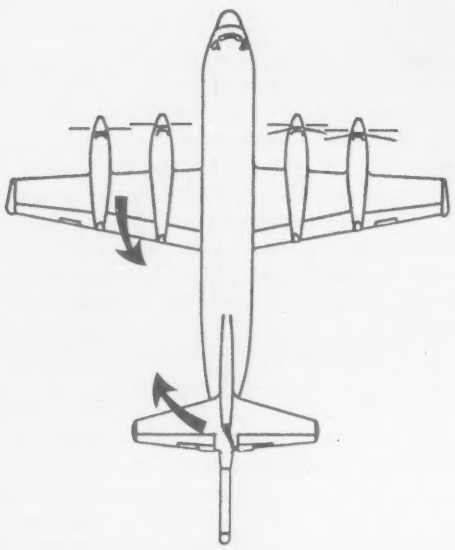


Fig. 4

Fig. 5

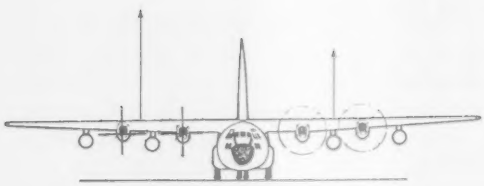


Fig. 6

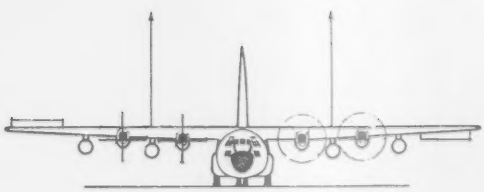


Fig. 7

to get full throw of the control surface. On the bright side, the rudder is slightly more effective since there's more rudder surface exposed to the airstream.

You should use trim to assist the required control surface inputs. The P-3 and C-130 communities practice zeroing the rudder trim before flare and touchdown for engine-out landings. If the pilot at the controls has been trimming throughout the approach (while power is gradually being reduced), the trim will be near zero. *Pilots at the controls should verify rudder trim is zero prior to crossing the threshold and commencing a flare in order to use rudders and rudder trim to best advantage.*

Ailerons should be used during engine-out landings to equalize lift on the wings in the landing rollout reversal. Assuming a no-wind or wind-down-the-runway condition, if the ailerons are left neutral when bringing the engines into reverse, an asymmetric lift condition will be present.

In the P-3, approximately 70 percent of the wing is "blown" by the propellers (approximately 45 percent in the C-130). The presence of reverse thrust will spoil lift. Airflow across the left wing during the landing rollout reversal is disturbed by the reverse thrust on engines No. 1 and 2 (Fig. 5). No reverse thrust is present on No. 3 and 4, and the airflow is cleaner, causing the lift vector produced by the right wing to be of greater magnitude (Fig. 6).

Think of your airplane as a tripod on wheels. If this tripod is rolling straight and you lift one of the rear wheels, the tripod will swerve. With No. 3 and 4 feathered, the airplane will try to swerve left due to the asymmetric lift vectors. Ailerons can be used to equalize these lift vectors and reduce the tendency to swerve. As the engines are reversed, full aileron toward the feathered engines will increase the lift on the left wing with down aileron and decrease the lift on the right wing with up aileron (Fig. 7). A near-equal lift condition now exists, and the tendency to swerve is reduced. The need for this aileron correction will decrease as airspeed is reduced and control surface effectiveness diminishes.

Elevators can be used to assist your rudders. Again, imagine the tripod with wheels. If the tripod is rolling with pressure on the nosewheel, steering inputs will be more effective. If there's no pressure forward, or if there's an uplifting force on the nosewheel, a tendency for that wheel to skid exists. As the aircraft is reversed, forward yoke pressure will cause the rudder inputs to be more effective. *Be careful, however, since full forward yoke pressure coupled with reverse thrust can bottom out your nosewheel strut.* As the throttles are brought into reverse, a degree of forward yoke pressure will assist any rudder input. As airspeed is reduced, more elevator can be added up to full throw as the airplane slows its groundspeed.

Feel more comfortable? Let's not be hasty! Your preparation shouldn't end here or with NATOPS. Talk to other pilots. Start a readyroom discussion. Correct application of control surfaces is critical, but even more critical is the human element moving them — you. Don't wait until things are quiet on final before you decide to improve your knowledge on this subject!

Birds Demand Equal Rights to Airspace

By LT Terry D. Nuss
VT-23

IN the last few weeks, the South Texas Union of Feathered Fliers (STUFF) has organized a concerted campaign to claim equal rights to the controlled airspace in the Kingsville area. Four birds have already been killed in this campaign, but STUFF has shown no signs of relenting in its demand to use the airspace freely. The four deaths are described below:

A T-2 was executing a GCA missed approach. Passing 1,000 feet AGL at 200 KIAS, a ferris hawk attacked with pinpoint accuracy, striking the No. 1 engine. The hawk died instantly but not before inflicting major damage to the engine. Engine vibrations, rising EGT and illumination of a compressor fire warning light resulted. Repairing the bent compressor blades and broken tangs will cost the Navy over $19,000.

A few hours later on the same day, a smaller, unidentified (black) kamikaze bird attacked another T-2. The attack came during a more vulnerable phase of flight — just after lift-off from a touch and go (when the pilot's ability to take evasive action is severely restricted). This bird's accuracy was not as precise, as it struck the No. 2 engine's intake lip, and although part of the bird went through the engine, no damage was done.

Two days later, in another attack, a bird attempted to inflict injury to the pilots by aiming at and hitting the windscreen. Insufficient force was attained, and the pilots escaped injury.

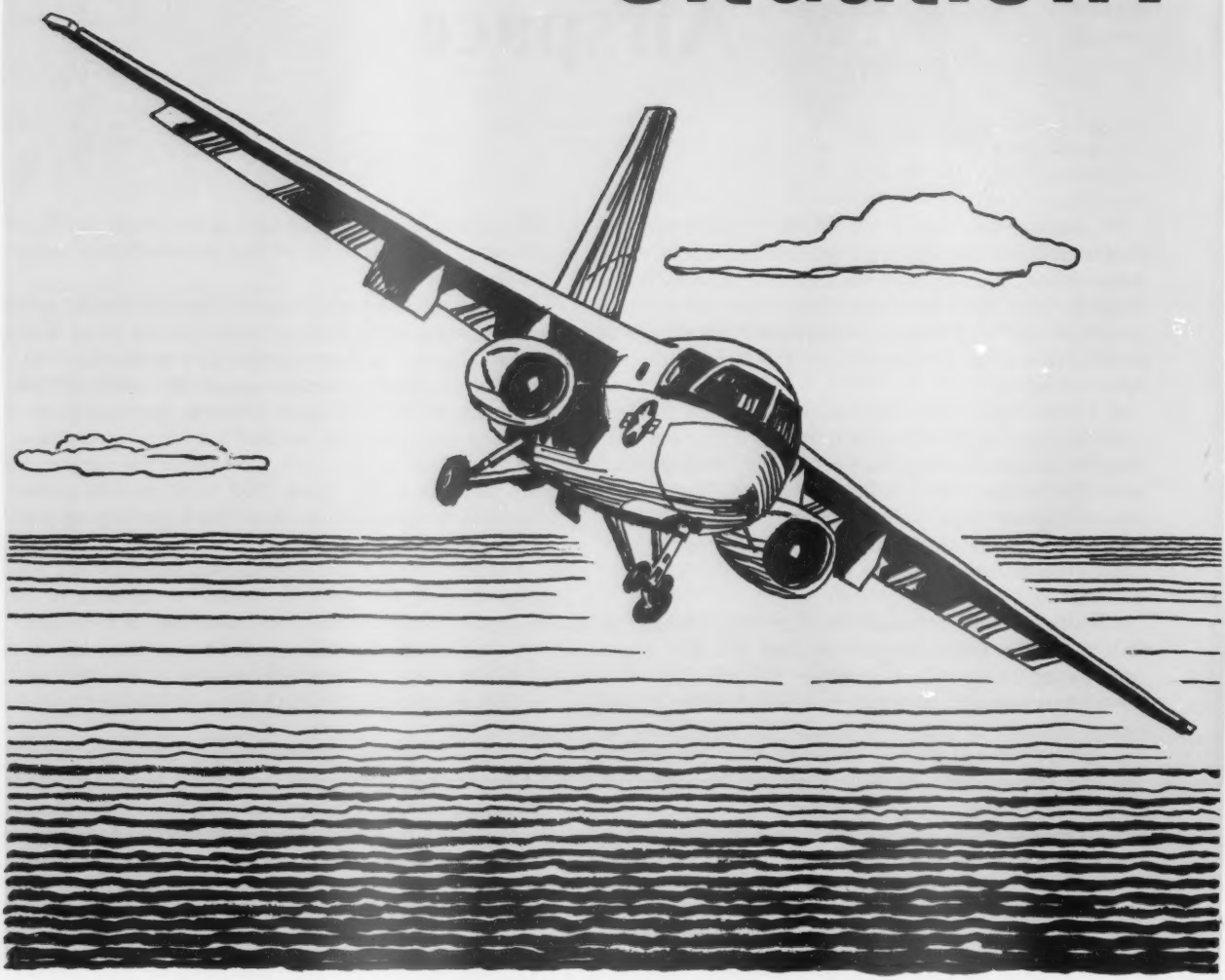
A week later, another attack was launched by STUFF in an attempt to inflict personal injury on pilots. During a section takeoff in light rain, a bird of unidentified origin launched itself against the top of the canopy in an attempt to get at the IP in the rear seat. No damage was sustained, but these attacks clearly show that a major offensive has begun, probably in conjunction with the spring migratory season.

As the migration begins, it is anticipated that the number of attacks on aircraft will increase as major reinforcements arrive from the South. It appears that STUFF will stop at nothing less than all-out combat, against which the T-2 weapons system is totally impotent. Although attempts have been made, the birds are totally unwilling to negotiate a peaceful settlement. The only defense against members of STUFF and its related organizations is to avoid conflicts at all costs. The following tactics have proven effective against previous onslaughts.

- Maintain an intense lookout for possible attacks on the aircraft. Many of the birds are as little as four to six inches across. This enables them to preposition themselves directly ahead of an aircraft and remain unseen until within 1,000 feet of impact. At 250 KIAS, there are fewer than three seconds available to a pilot to see the bird and take evasive action.
- When birds are seen, pull up if possible and commence a turn away from the birds. Bird aerodynamics severely restrict their ability to attack from below, but they can easily dive as an aircraft approaches.
- When birds are spotted by a pilot, especially in a large concentration, the sighting should be reported to the controlling agency so that other pilots may be forewarned.
- To increase your ability to see a bird in time to avoid its kamikaze attack and reduce the damage which may result, aircraft speed above 250 KIAS below 10,000 feet should be minimized.
- Injuries to pilots can be reduced in the event of attacks by keeping the visor down at all times. Some birds have developed night and all-weather capabilities, as evidenced by one of the incidents mentioned previously. Avoidance in these cases is well nigh impossible — protection through reduced airspeed and lowered visor is highly recommended. And remember, strobe and landing light combinations may warn the bird that he has a formidable opponent!
- Limit low altitude operations (below 6,000 feet AGL) to the minimum required for mission completion. Marshes should be avoided, as many species prefer to stage their attacks from these areas.

Although STUFF has not reached the level of organization and sophistication theorized by Alfred Hitchcock's "The Birds," STUFF's members pose a real danger to aircraft and the people who fly them. They have our aircraft vastly outnumbered, have shown no inclination to abide by FAA and OPNAV rules governing the airspace we share and are ready and willing to die for their cause. Know your enemy, anticipate attacks and avoid confrontations at all costs. ◄

Situation?



By LCDR Barry Schwoerer
VS-37

DANGER is a sneaky commodity. Take this S-3A, for instance. Now that it's about to push out of Marshal, the aft crewmembers report a smell similar to that of a heater coming on after a summer of dormancy. Warm air is now coming from overhead ducts between the aft seats. The TACCO reports that it feels like the air-conditioning system is on full hot and asks the pilot to recycle it. Meanwhile the aircraft has departed the Marshal pattern.

When the air-conditioning is switched off, the SENSO becomes aware that a rumbling sound stops; the rumbling sound starts again when the air-conditioning is cycled on. Air temperature starts to cool, but now smoke and a smell of wire burning is coming from air-conditioning vents. The TACCO calls electrical fire aft, breaks out the emergency checklist and reads the checklist to the pilot. As oxygen masks are donned, the aircraft is now one and one-half miles

S-3A, blue water operations, Case II, holding in Marshal

from the break, the pilot calls "see you" and switches to Tower. In accordance with the checklist, the pilot secures both electrical buses, resulting in the radio and ICS reverting to the backup mode. This condition puts the pilot in the position of being the only one who can transmit and receive on UHF. Control of the radio shifts to an auxiliary panel that's awkwardly located on the pilot's side panel. To regain ICS between crewmembers, everyone must shift to override. In addition, the following systems are affected: trim reduces to half-rate, speedbrakes reduce to half-rate and leading edge flaps are lost. To clear smoke, the pilot continues the checklist by dumping cabin pressure and opening the vent. Immediately the aft fliers report heavy smoke from the air-conditioning vents.

The aircraft has executed a break and is now downwind. The pilot must set the manual radio control to Tower frequency (hard to see and does not have detent to allow "no sight" set) and slow the aircraft to approach speed. Turning into the groove, the pilot attempts to transmit his situation to the ship. Smoke has cleared aft. As he keys the radio, the No. 1 generator drops off the line. The aircraft now has a total electrical failure with no AOA, indexers, attitude sources, radios or ICS. The aircraft is waved off by the LSO for a long-in-the-groove approach (not surprising, considering the situation and lost systems). After waveoff and turn downwind, the pilot instructs the copilot to start the auxiliary power unit, which restores essential power and in turn brings the radio and essential instruments back to life. An OK landing is executed on the next approach.

Fortunately for the crew, the bulk of the emergency has occurred beneath clouds and during daylight, allowing the pilot to maintain VFR and fly with visible reference to the ship. Given IFR or night, this emergency might have been a real thriller. What could have been done to better anticipate the events that occurred, and how could they have been handled better? Monday morning quarterbacking aside, the following actions could have greatly simplified the situation:

- As soon as it became apparent that emergency procedures were required, the pilot should have informed the ship, *declared an emergency* and radioed that electrical failure was a possibility. Only then should electrical power have been secured. This action might have prevented a waveoff for being long-in-the-groove.
- Preset the backup radio off-line control unit to a control frequency prior to penetration to Tower for Case I and II and Approach Control for Case III. This would have precluded the necessity for the pilot to fumble with the radio during a critical point in the approach.
- Anticipate the possibility of a generator dropping off the line. Brief the copilot to recycle the generator switch if a generator drops off the line. This action did in fact recover the generator after landing.
- Anticipate the need for the emergency generator by completing the electrical fire checklist, and start the auxiliary power unit. This would have prevented lost radios and essential flight instruments on the approach.
- Anticipate the potential for misinformation among crewmembers during an emergency. The SENSO reported the stop and start of rumbles associated with the cycling of the air-conditioning switch. Heat and smoke were emanating from the air-conditioning ducts, yet were reported as an electrical fire. These were classic symptoms of an environmental control system turbine failure, which was the culprit in this case. There was **no** electrical fire and **no** need to secure the electrical buses.

The key to the successful handling of any emergency is anticipation of the worst. Figure what the worst might be and then stay ahead of the situation. Carefully analyze the emergency **before** taking any action which may be incorrect and create additional problems. Be alert to the possibility that excitement and fear can lead to improper analysis of a situation and miscommunication of vital facts.

Anticipate. If you let yourself get behind the eight ball, you might wind up in Death's left corner pocket! ◄

Few people have been struck in the head by whirling helicopter rotor blades and lived to talk about it. This story is about a student naval aviator (SNA) who did. It's must reading for all helicopter crews and should prove of interest to any of you who work in the vicinity of aircraft.

FOLLOWING a thorough brief, the mishap SNA, his instructor and another SNA walked to the flight line to preflight their TH-1L. Aircraft lights were not checked, however, even though the instructor pilot's (IP's) second flight was to be a night event. The crew then manned the H-1 with the IP in the left seat, the mishap SNA in the right seat and the night-event SNA in a passenger seat. Start, taxi, takeoff and the first event — a navigational training flight — went smoothly. The aircraft then returned to Homeplate for hot refueling and a crew change.

After refueling, the H-1 air taxied to the crew change area, where the night-event SNA replaced the mishap SNA in the right seat. At this point, the mishap SNA asked the IP if he wanted him to check the exterior lights, and the IP said yes. The SNA left the aircraft and walked aft along the right side of the H-1. He then intended to walk behind the helo and check the lights on the left side. He had the dark visor on his helmet down and chin strap secured. As he began to cross behind the aircraft, he was looking straight ahead and not toward the rear of the H-1 so as to avoid the hot exhaust gas from the engine.

Then it happened! The SNA felt the impact of the tail rotor blades and realized what he'd done. At the same time, the IP and SNA copilot heard and felt the airframe shudder. At first, the IP thought he had a control problem, but quickly remembered the SNA checking the lights. He told his copilot that he suspected a tail rotor strike, and both pilots began looking around.

Moments later, the copilot saw the SNA staggering up the right side of the aircraft without his helmet and holding his bleeding head. The copilot then exited the H-1 to assist the mishap SNA while the IP secured the engines and notified the tower. Next, the crash crew and medical personnel arrived on the scene and the SNA was transported to medical for treatment. Fortunately, he wasn't seriously injured.

The mishap SNA's helmet was found lying on the ground to the right of the H-1 and about nine feet from the leading edge of the tail rotor blades. Pieces of the helmet were located more than 200 feet aft of the helo. Both tail rotor blades were damaged by multiple helmet strikes and had to be replaced.

The IP was unaware that the SNA intended to pass behind the aircraft.

The mishap pilot later stated that he could see the tail stinger and **assumed** he had adequate clearance from the tail rotor. However, visibility of the tail rotor tip path was restricted by his dark visor and close proximity to the tail rotor blades (the tip path is detected as an area of decreased transmission of light from a background source). Nevertheless, having his visor down saved his eyes from injury, and a proper helmet fit most likely kept his helmet from being ripped off during the initial blade strikes. There is an interesting sidelight to all of this: Not long before this mishap occurred, all flight helmets had been turned in for modifications that included installation of energy absorbing liners and double chin straps with double snaps. Quite likely, had the SNA not been wearing the modified helmet with the chin straps snapped and properly fitted, he would have been seriously or fatally injured.

There were three factors which led to this mishap. First, the SNA was breezing a little too easily around the hazards associated with helicopter aviation. He'd just completed an above average training flight and was two weeks away from earning his wings. During his training, he had done well and was very relaxed in the H-1. This relaxation almost cost him his life. Second, the SNA proceeded aft to inspect the exterior lights without being under positive control of the cockpit. Third, the IP failed to test the exterior lights during preflight, even though his second hop was to be at night.

The squadron took the following actions to correct these mishap factors: All reporting IPs and SNAs will be briefed on this mishap. Squadron SOP now requires that IPs test night lights during preflight or prior to hot seat whenever a night event is anticipated. Additionally, all personel are required to exit rotor arcs within sight of and under the positive control of the pilot at the controls.

Although this mishap involved a helicopter, the message is clear to all of naval aviation — working around operating aircraft requires vigilance on the part of all personnel. Additionally, this mishap is proof that wearing one's personal equipment properly pays off. As we said at the beginning of this article, few people have been struck by whirling rotor blades and lived to talk about it. In this mishap, a $325 properly-worn helmet saved an aviator's life.

All aviation units should post the accompanying helmet photo on their bulletin boards. In this case, one picture is worth a thousand words. ◄

"The mishap SNA's helmet was found lying on the ground to the right of the H-1 and about nine feet from the leading edge of the tail rotor blades. Pieces of the helmet were located more than 200 feet aft of the helo. Both tail rotor blades were damaged by multiple helmet strikes and had to be replaced."

The "Proper?" Use of Life Support Equipment

By LT W. L. Little, MSC, USN
NRMC Portsmouth, VA

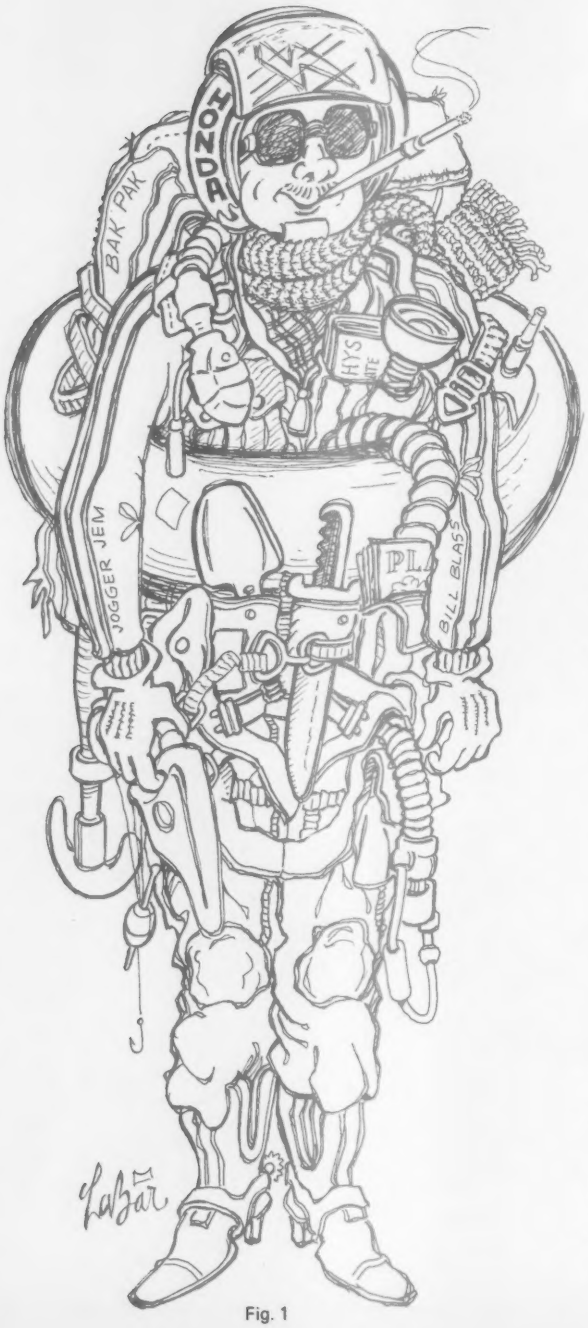


Fig. 1

SINCE Wilbur and Orville first kicked the tires and went into burner at Kitty Hawk, North Carolina, the search for the perfect life support equipment (LSE) has consumed countless manhours and funds. Now that we're in the 80s, naval aviators boom (or hover) off into the wild blue yonder wearing some of the best equipment available.

To say that our survival equipment is perfect, however, would be facetious. Every one of us who flys knows basically what equipment is available, although mishap reports clearly show an incredible lack of knowledge in the proper use of this equipment during emergencies. There have been countless injuries and an untold number of fatalities attributed to the non-use or misuse of life support equipment.

We challenge you to read this article with an open mind. We know many of you feel that NAVAIR and the aeromedical specialists are trying to outfit you as depicted in Fig. 1, but this isn't the "straight skinny." Why, then, you might say, do so many guys misuse their equipment and/or illegally modify their LSE when OPNAVINST 3710.7 series, NAVAIR 13-1-6 series and OPNAVINST 4790.2 series manuals specifically establish the correct configurations, and when our training programs presumably teach the correct methods of use? A few "excuses" we've heard over the years are:

- The gear, as it exists now, stinks (doesn't fit, it's hot, it's cold, it's heavy, it's bulky, etc.).
- It's only a small change. It doesn't hurt anyone or any thing.
- We can't obtain the proper gear.
- We need this mod to meet operational commitments.
- We'll probably never need to use this equipment anyway.
- The system takes too long to change.
- The "Macho" image of some naval aviators (must look "sharp") won't tolerate this gear.
- I've never really been properly informed of the dangers involved.
- Why is this system or equipment set up this way anyway?
- I've never had a chance to use this gear in a training environment.
- We've had the opportunity to use it for real and it didn't work.

(There are no doubt many more reasons, but you get the idea . . .)

More than one frustrated PR has tried to do a conscien-

tious job but has been pressured by aviators to "look the other way" as they continue to fly with their illegal gear.

In my experience, I've noticed one especially significant factor associated with illegal flight equipment. If the CO is actively behind "the program," there are no illegal modifications. Period! As an example, a CAG I know put the word out: "There will be no illegal equipment worn by the aircrews in my wing." (And there wasn't any.) His successor arrived, armed with a USAF mask, zippers in his boots, extra pockets on his MA-2 and G-suit, etc., and within six months, 50 percent or better of the aviators were using illegal equipment! Like it or not, misuse and abuse are supervisory issues at the command level.

I've never seen an aviator who insists on using illegal equipment after his skipper put out the word that it would not be tolerated!

Let's list the equipment for our Mk-1 Mod 0 aviator and identify some of the most common misuses and illegal modifications installed on various pieces of gear that have caused documented injuries and fatalities:

ITEM	CLASSICAL ILLEGAL FIX/MOD OR EXAMPLE OF MISUSE	DOCUMENTED CAUSE OF INJURY/DEATH ASSOCIATED WITH PROBLEM
NOMEX underwear	Not worn when appropriate. Nylon and other synthetic underwear and even gym shorts utilized.	In a fire, synthetics melt and stick to the skin causing severe burns which are difficult to treat.
Flight Suit	No FOD pocket flap. Extra pockets sewn on for knives, radios, flashlights, etc. Collar not worn up. Too tight. Sleeves rolled up, legs too short. Non-NOMEX suits utilized.	Severe burns to neck, arms and lower legs. Equipment tearing loose causing injuries, FOD.
G-suit	Not right size or not adjusted properly. Extra pockets sewn on to carry extra equipment.	Loss of G protection. Injuries due to excess equipment which tears loose from suit.
MA-2 torso harness	Wrong size (generally too big). Extra pockets. Equipment not secured into pockets properly.	Loss of restraint so unable to use ejection handles under G. Loose equipment causes injuries at ejection. Torso harness doesn't properly absorb opening shock of parachute. Loss of essential survival equipment.
SV-2	Wrong size or poor fit. Equipment not properly secured. Extra pockets. Lack of knowledge of contents and proper use of same. Dead batteries in beacons and radios. Flares which are no longer usable.	All types of rescue problems, especially in localization. Equipment hitting individual on egress. Loss of essential survival equipment on egress.
LPU/LPP	Improperly adjusted. Covers secured to snaps on lower lobes with rubber band. Bad CO_2 cylinder and/or not screwed in far enough. Actuators wired or tied closed.	Poor flotation. (LPA won't right the individual.) Doesn't inflate properly. Individual cannot snap lobes together.
Gloves	Not worn at all. Dirty, greasy, with holes. Leather gloves substituted for NOMEX type.	Burns and cuts. Dirty gloves are more slippery when wet. Loss of cold weather protection and wind chill protection. In fire, leather burns and shrinks which can result in severe burns to hands.
O_2 Hose	Unauthorized "fix" to attach O_2 hose to MA-2 so doesn't "float" during ACM.	Cannot discard seat pan without unlocking hose or undoing "fix." Good possibility of drowning in interim.
Helmets: all types of military and commercial varieties	No reflective tape. Black paint/tape. Poor fit. No *Velcro* for strobe light attachment. No edge roll, nape strap and/or chin strap. Snap-on chin straps. Loose chin straps. Visors up. Sunglasses instead of visor. Dirty, rotten chin straps. Dried out ear cups. Inadequate spacers behind the cups.	Rescue problems. A study from 1969-1975 showed that reflective tape on the helmet was frequently the only mechanism which made the survivor visible. Reflective paint doesn't even come close to tape in reflecting ability. Poor sound attenuation resulting in hearing loss and communication problems. Face, neck and head injuries when the mask and/or helmet is lost during egress. FOD in eyes. Broken necks when helmet is ripped off. Knocked unconscious at ejection. We suspect many "lost at sea" cases during low-level high-speed ejections may be attributed to helmet loss and subsequent incapacitation.
O_2 Masks	Wrong size. Worn loose or connected to only one side. Not worn at all. Broken/worn O_2 hose, USAF MBU-5 and MBU-12 masks worn without waiver. Masks dirty.	Loss of underwater breathing capabilities. There have been approximately 50 documented cases in the last 10 years where the use of the Navy's mask underwater has helped save the individual. Also, protects face from injury.
Boots	Zippers installed. No steel toes.	Opening of the zipper during ejection with resultant loss of boots, broken ankles. Heat transferred through the zipper resulting in third degree burns to feet. Complete loss of boots in a fire due to zipper failure. Injuries to ankles, toes, feet, etc.

Now, instead of just leaving you out on a limb, here are some steps that you can take to help with this problem.

1. Education: This *APPROACH* article, *MECH*, Crossfeed, AOMs, physiology and water survival training are all devices which should help.

2. Change the equipment (authorized mod or replacement): This is not as impossible as many of you perceive it to be, especially if you work within the established guidelines. You may have heard a thousand times that "it doesn't work!" Until you try it, you'll never know. It's not a perfect system, and it does take time to respond, but circumventing it and not identifying real problems helps no one. If more and more aviators, flight surgeons, physiologists, aeromedical safety officers (AMSOs), aircrewmen, survival equipment specialists (PRs), etc., griped about the gear officially (not just in the readyroom or at the bar), the system would surely improve. If an unauthorized mod appears to be a good one, why not "go legal," and at the same time, let the guys in the other squadrons take advantage of someone's good idea? Simply encourage your command to request a waiver for that particular mod from their type commander, or have the command send an Integrated Logistics Support/Acquisition Management Panel (ILS/AMP) action chit via their type commander to NAVAIR. It's as simple as that. Much can and should be done in getting new and better flight gear. The "fleet guys" are daily users, and have some good inputs to make. NAVAIR appreciates (and requires) these inputs in order to better respond to fleet needs. Give it a try.

In the areas of education and training we have come a long way. We now have Aviation Training Model Managers (ATMMs) for water survival (Naval Aviation Schools Command) and physiology and egress (Naval Aerospace Medical Institute (NAMI)). The ATMMs are working hard to develop standardized curriculums for fleet-wide use. This fact alone will help tremendously.

NAVAIR has prepared training packages on the parachute four-line release, on the FLU-8 (water-actuated device), and others. Every mod or new piece of life support equipment will now be preceded by a training package which can be used to get the word out to the fleet before the authorized change arrives.

OPNAVINST 3710.7 series specifies minimum requirements for aircrew personal protective equipment and requires that all aircrews and passengers shall use the latest available equipment as authorized in the NAVAIR 13-1-6 series manuals for flight in all USN/USMC aircraft.

OPNAVINST 4790.2 series identifies COMNAVAIRSYSCOM as the only authority for modification of aeronautical equipment, including aircrew personal protective equipment or other aviation life support systems (ALSS). OPNAVINST 4790.2 does permit an operating activity, with approval of the controlling custodian, to conditionally modify one unit of equipment in-service to correct or overcome unsatisfactory conditions or improve that equipment.

The NAVAIR 13-1-6 series manuals provide technical information related to configuration, application, function, inspection and maintenance of a particular category of aircrew personal, safety and survival equipment. These manuals are a concise local source of definitive guidance on the latest authorized equipment and the correct configuration of this equipment; i.e., Chapter 3 of the .7 manual contains tables depicting survival equipment by aircrew duty and type aircraft and configuration drawings of aircrew flight equipment by type aircraft and climatic condition.

The oft-used statement "has been adequately documented" (regarding perceived deficiencies of personal flight equipment) is heard on surveys, noted in mishap reports, etc. and may, in reality, be a false assumption as it pertains to the reporting programs provided for in OPNAVINSTs 4790.2 and 3750.6. In today's climate of scarce dollars and many demands, aircrews have a vested interest in providing the impetus necessary to correct personal flight equipment deficiencies which impact on personal safety and operational capability of aircraft. The administrative effort expended in submitting these reports will be repaid many times in improved equipment and in the saving of lives and aircraft.

Proper utilization and fit of personal flight equipment is an aircrew/command responsibility. Aircrews flying with known discrepant, ill-fitting, unauthorized and/or unapproved personal flight equipment add unnecessarily to the risks associated with inflight/emergency/survival situations.

Finally, many of us in the aeromedical business believe the AMSO program is still in its infancy and has unlimited potential. As more and more air stations (and maybe, someday, ships) receive AMSOs, they will be able to assist you and your support personnel in getting the word to the right people in the right way.

No, our aviation life support equipment isn't perfect and the system that exists to solve the problems isn't perfect, but with proper education and training, we can come a long way toward "bringing 'em back alive" when the aircraft quits and you have to choose between getting out or riding it in. ◄

SAFETY IS FOR SISSIES

or

Real men eat quiche

By LCDR S. J. Fontana
HS-9

FOUR hours of Plane Guard had passed, and the flight was becoming extremely boring. The coffee thermos was empty, the HAC was out of cigarettes and the relief tube was clogged. "Slowboat 610 — we have a log run for you" came over the radio. Great, something to do to break the monotony. Arriving over the small boy, the HAC zoomed in for a quick-stop over the fantail. The next 20 minutes featured multiple frustrations in coordinating hoisting sequences of passengers and baggage. "This ship doesn't have its stuff together," thought the HAC. "I'll give 'em an air show to demo what a pro can really do." Departing the hover, the HAC pulled max torque and pushed the nose over. Unfortunately, the ship rolled at this point and the whip antenna extended into the helo's flight path. What happened to the crew?

Nothing. This story is fictitious, but could it happen in your command? In other words, how good is your safety program? Maybe it's time to take another look at it.

What is the real image of a good safety program? Many people will say it's the lack of mishaps or personal injuries. Nothing could be further from the truth. That kind of thinking is pure negativism. It leads to the concept that nothing hazardous should be done because the Safety Officer might catch you. While some feel that being friendly with the Safety Officer is tantamount to siding with the enemy, most of us know this is incorrect or the Navy wouldn't have exhibited a steadily declining aircraft mishap rate over the past 30 years.

Once again, what is the real image? Mickey Mantle once stated that he could tell a winning team from a losing team in five minutes. How? Simply by walking into the locker room and observing their attitude. What is the attitude in your readyroom? Is it neat and orderly, or does mass confusion reign? How content are your maintainers? Are the tool boxes organized? What is the command UA rate? How about your retention rate? If you can't answer any of these questions off the top of your head, then you don't have a feel for the command climate.

And what does quiche have to do with all this? Everything! It's all a matter of attitude. The attitude promulgated in the book *Real Men Don't Eat Quiche* is that a "real" man can hack it, regardless of the outcome. Contrary to this, a real man should know his limits and be willing to admit to them. The last time someone asked you how many flight hours you had, how did you answer? Probably with something like "2,500 hours." In my opinion, a more professional answer (and the one I use) is "2,500 hours, mishap free."

How do you solve an attitude problem if you've found one? This is the toughest problem any safety officer can face. Obviously you can't patchwork the program as holes appear. Like an underground fire that keeps surfacing, all the foot stomping will only burn your feet, and the fire keeps burning. First and foremost, admit your program isn't perfect. No one's is. Then take a new tack. The best gimmick has been available for years. We've all heard the expression "Safety is for Sissies" bantered about over the years, more or less in a humorous vein. Left unchallenged, this expression could become damaging to a safety program. With a slight twist, however, this expression could actually become the heart of a revitalization program in safety awareness. Think of the potential. You could have a Sissy of the Month Club, a Senior Sissy or even a Super Sissy contest with T-shirt awards! Are you smiling yet? Good. Maybe now you have the proper attitude. Let's add some fun to safety. ◄

Fuel Management

Why Plan When You Can React

By 1stLT Mark J. Willis, USMC
HML-367

CLEARED for a minimum delay approach to a left downwind, a Marine UH-1N declared minimum fuel and hurried into the airport traffic area. Anxiety filled the cockpit as both pilots scanned a fuel gauge indicating 110 pounds. The four passengers, unaware of their situation, sat passively in front of a malfunctioning auxiliary fuel bag containing 900 pounds of JP-5. On base leg, at 500 feet, 70 knots and 90 pounds of fuel indicated, the No. 1 engine flamed out, followed closely by sputters and silence from No. 2. Already close to max gross weight, the H-1 descended rapidly. The pilot in command, hampered by low altitude and a high rate of descent, was unable to tailor his autorotation to his *extremis* circumstances. The tail section impacted first and, as designed, broke away. Simultaneously rolling and igniting, the aircraft was transformed into a classic ball of flame. One airframe, two pilots, one crew chief and four Marines were lost.

Although only a hypothetical situation, this could be an unnerving possibility for a Marine helicopter crew.

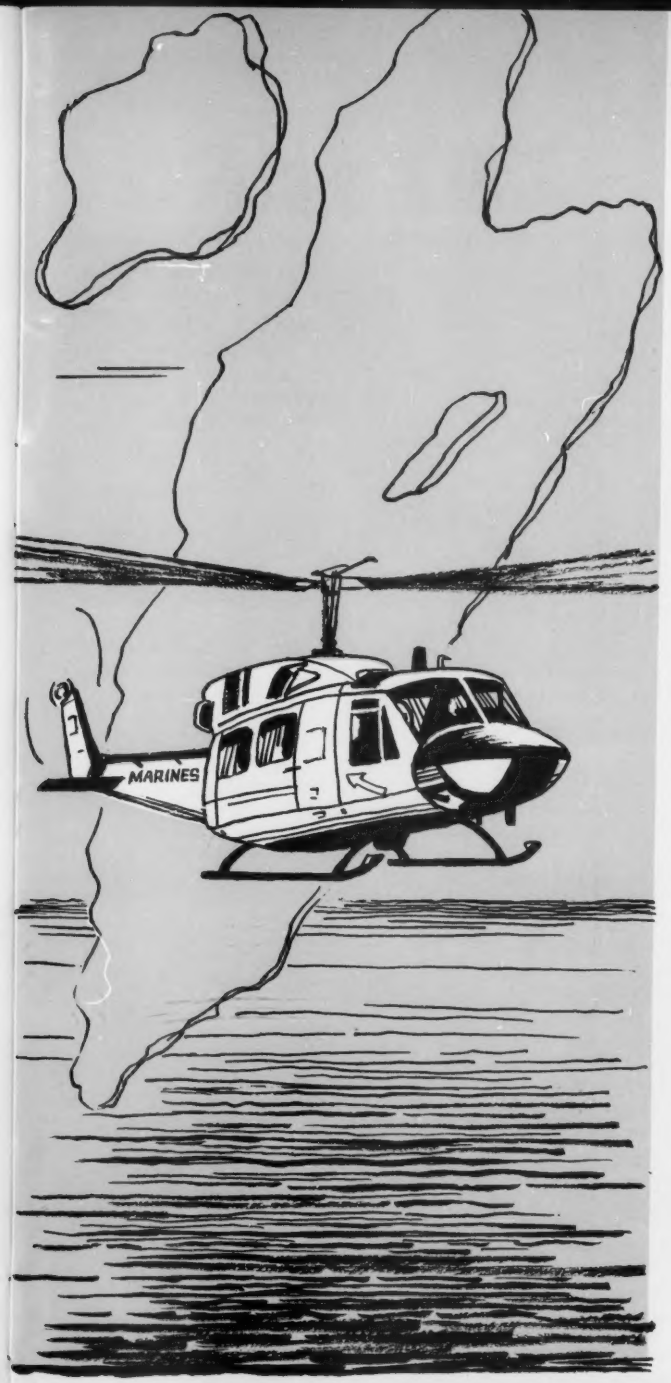
At a small Marine Corps airfield on the West Coast, a Huey crew had just completed a NATOPS brief. A simple mission coupled with beautiful weather foretold an enjoyable morning of relaxing flying. The 80-minute round trip to an isolated offshore island to pick up and return four Marines would certainly be a piece of cake.

The crew chief was duly briefed and all last minute checks were completed. Sufficient life preservers for the passengers were loaded. A full aux fuel bag added one hour of flight time to the Huey's two-hour and 15-minute endurance, simplifying the fuel management problem for this overwater operation. Weather was checked again and the update showed 12 to 15 miles visibility with no ceiling along the flight path or at the destination.

Most mishaps can be traced through a successive train of improper procedures, faulty reasoning and thoughtless decisions. Once any one of these errors is averted, the outcome is usually classified as a "routine" mission. This flight proved to be no different. Twenty-twenty hindsight reveals the crew encountered three circumstances requiring a decision. A different decision at each critical point would have dramatically influenced the outcome.

The first problem was encountered approximately 10 minutes after takeoff. The TACAN developed a 40-degree lock-off, then lost all DME indications. The island offered no other navigation aid compatible with the H-1's navigation equipment. Shortly after the TACAN went into the "dead bug" mode, the aux fuel bag malfunctioned, saddling the bird with 900 pounds of dead weight. The pilots discussed their problems and reasoned that the local approach control could provide the necessary vectors. Since the co-pilot had brought along a fuel packet, they decided to continue the mission to the destination and, if required, refuel on the island. With home base only 20 minutes behind them, the first decision was made to continue.

With assistance from the local controlling agency, the island and the pickup point were located. The second problem arose when both pilots discussed the return trip. Fuel available was measured against fuel required. An additional consideration was a higher headquarters restriction requiring an immediate landing when 300 pounds of fuel remained or five minutes after the illumination of a master caution LOW FUEL light. (The H-1 low fuel caution lights and the fuel gauge operate independently. Due to previous calibration problems, the "300-pounds or one low fuel light" rule was strictly enforced. No matter which came



first, a landing was mandatory.) The pilots again discussed the use of the fuel packet. Both pilots concluded that home base could be made within the existing restriction of 300 pounds remaining without refueling at the island. With the island fuel farm only a five-minute flight from the pickup point, the second decision was made — return unrefueled.

The H-1 departed the island heading east on the reciprocal of the outbound track. The copilot continued the fuel consumption calculations. Ten minutes into the homeward flight, it was noted that due to the increased internal weight, the H-1 was burning fuel more rapidly than before. A revised fuel planning estimate set the fuel remaining at the home field destination at exactly 300 pounds. Ten minutes later, approach control advised a frequency change and the radio was switched to the local FSS. Repeated attempts to resurrect both the aux fuel bag and the TACAN were unsuccessful. Thirty minutes into the return flight, neither the island nor the shoreline ahead was visible. The pilot voiced his concern, but no discussion of possible options ensued. Five minutes later, with only 350 pounds of fuel remaining, the crew sighted land through the haze. A slightly errant flight path had combined with a tailwind from the northwest to put the H-1 almost 10 miles south of the intended coastline entry point to the airfield. Both pilots realized that they'd be hard pressed to arrive at the airfield within the 300-pound minimum restriction, yet neither voiced that opinion. This presented the third problem. The fuel gauge indicated 350 pounds of fuel with 15 minutes of flight remaining, at least 10 minutes of which would be over water. (Fuel consumption rate for the UH-1N at cruise airspeed is approximately 625 lbs/hr.) The closest airfield was a small, uncontrolled civilian base about 11 minutes away. The copilot suggested the civilian field — or even the beach — as suitable sites for landing. Passing over the beach, the PIC made decision three. Already in violation of the 300-pound rule by not landing at a suitable spot along the beach, and with 200 pounds of fuel remaining, the PIC decided to press on to home plate. The copilot was visibly disturbed but did not voice his feelings or recommend an alternate course of action. The PIC indicated a minimum fuel state to the tower and requested direct routing to the taxiway closest to the fuel pits. A safe landing was executed, and the H-1 taxied into the fuel pits with the fuel gauge indicating just 90 pounds.

Fortunately, these pilots had the opportunity to learn several valuable lessons without experiencing a mishap like the one depicted in the opening narrative. No flight should be considered "routine," no matter what the mission. More important, if fuel is available, take it! Finally, the copilot lived to appreciate a lesson concerning his duties within the cockpit. A crew is a magnificent team when it functions professionally. Working together, a pilot and a copilot will create a cooperative relationship that will ensure the safe completion of any assigned mission. But a weak link in either seat is far worse than an unoccupied seat! *If necessary, the copilot must convey to the pilot, regardless of rank, any knowledge of exceeded capabilities or regulations.*

The difference between a mishap and a "routine" flight for this H-1 crew on one sunny morning was either 90 pounds of fuel or one decision. ◄

LETTERS

Joining in the Duet

FPO Seattle, WA — I am currently on deployment and just ran into the September issue of *APPROACH*. As a helicopter SAR pilot, I feel you had some excellent articles with application to all services. The reason I'm writing is in case you haven't yet received a deluge of letters concerning the "Duet With a Hangman" article. In particular, the event dealing with the U.S. Coast Guard. Having flown both Navy and Coast Guard aircraft, I can sympathize with the Marine Corps pilot's concern over the lack of adequate comm and nav capabilities in anything other than a tactical situation. The Coast Guard, however, took care of that problem long ago, probably because we rely heavily on the civilian sector for positioning, comm, etc. With very few exceptions (and our helos aren't one of them) all our SAR aircraft are equipped with a minimum of:

- Communications: UHF, VHF-AM, VHF-FM, HF
- Navigation: ADF, TACAN, VOR, LORAN

I can only suspect, not being involved in the particular SAR effort mentioned, that it is highly unlikely that the three CG H-3s had UHF problems. Instead, I feel it has something to do with SAR responsibilities. The C-130, from all indications, was acting as the On-Scene Commander (OSC) while the helos were Search Rescue Units (SRUs). It is the OSC's responsibility to pass information to and between SRUs along with directing the rescue effort, being the communications link with the SAR Mission Coordinator (SMC), maintaining aircraft separation (vertical and horizontal), maintaining aircraft guard and setting up search areas (usually different areas for different SRUs). The only communications required then would be between the SRU and OSC: "the man in command." The OSC will take care of all your needs. If in doubt, ask. He will pass pertinent information between SRUs. Any communications between SRUs might provide that extra amount of confusion to the detriment of the overall mission.

LCDR John Whitehouse, USCG
USCGC POLAR SEA

Detroit, MI — I enjoyed Major Mallet's article ("Duet With a Hangman," September 1982) and agree with the thrust and advice provided to the "UHF-only" community. I fear, however, that he may have created a point of future confusion as to Coast Guard SAR aircraft communication capabilities in his brief mention of the "First Event." All Coast Guard helicopters are equipped with UHF (AN/ARC 51-A), VHF-AM (AN/ARC 84), HF (AN/ARC 94) and VHF-FM (AN/ARC 160) communications radios. This is necessary because of our interaction with both military and civil aviation in the prosecution of our SAR and law enforcement roles. The CH-46 mentioned was not "left out in the cold" because of a lack of Coast Guard capability, but for some other reason (which can only be conjectured without further information).

LCDR R. L. Murphy, USCG
USCG Air Station Detroit

• Right you are. It seems that Navy SAR helicopters are all alone in their need for VHF radios; hopefully, the CNO's directive for off-the-shelf purchases will soon alleviate this problem . . . —Ed.

Autorotation to an Ice Floe, 1955

Horsham, PA — Dear *APPROACH* Staff,

As you requested, I am happy to give you my remembrances of an arctic adventure while serving as O-in-C of Helicopter Utility Squadron TWO, Det 73, aboard the USCGC EASTWIND.

It was July 1955 and we were part of operation SUNECK II; our mission was to provide logistic support for six radar sites being constructed along the east coast of Baffin Island. These were to become part of the DEW line stretching from Nome, Alaska to England. We had a complement of two HTL-4 Bell helicopters on board.

It was in one of these birds that the Exec (CDR Dudley) and I were scouting the ice ahead of the ship. We were flying at 400 feet over a rotting ice field. The ice was melting and refreezing. Deep channels were cut into the ice by runoff. These channels, about 18 inches deep and four to six feet across, surrounded small jagged islands of ice.

The engine quit with a loud BANG. As you know, a helo comes down RIGHT NOW — like a streamlined rock, as the saying goes.

Down collective and autorotation were instinctive. Thank goodness the book called for three practice autorotations on each training flight, so it was quite a natural thing to do.

Turning into the wind, I sent a MAYDAY call to the ship. So did CDR Dudley. The ship never heard us. I guess the transmission may have been cancelled when both radio buttons were hit simultaneously.

Not to worry; a few other items were contending for sincere consideration. Where to set her down, look out for those outcroppings and don't skid over the edge!

Coming in high over the edge of an ice island, a big flare and full up collective brought her to a three-foot skidding stop. Once on the ice, full down collective hopefully minimized the skid. The effective "runway" length was 25 feet and proved to be plenty long enough.

A large hole had melted into one of the piston heads, causing the failure.

A new engine which we carried aboard for just such situations, in the hands of our excellent crew of five super mechs, had the bird airborne again in a few days.

The traditional "survivors" snapshot when we were back aboard was most welcome and made it, all in all, a fine day to remember. No one was hurt and the plane was OK.

Regarding the copies of *APPROACH* which you so kindly sent to me: I have taken the opportunity to read several articles and find them to be as exciting and well written as I remember. The style seems very much the same . . . the stories really hold a pilot's attention and give insights into mistakes and all kinds of happenstance which hopefully will be recalled at appropriate times to prevent future accidents. I do think you have come a long way with the visuals. More pictures, bigger, good artists' conceptions and schematics make the articles much more alive . . . very attractive. I am planning to subscribe to the magazine. I'd forgotten how well they read. (The language changes . . . what is a RIO? I had to think it out . . . Radar Intercept Officer, eh?)

I wish you the best of luck, and many happy landings.

Frank Lagan
LT, USNR

P.S. If you ever do decide to reinstate the "Old Pro Club," please keep me in mind.

• Mr. Lagan wrote to us asking for a replacement membership card in the "Old Pro Club." He told us a little about how he paid the "entrance fee" for club membership, and in our response, we asked him for more details. His adventure certainly earned him a place among the best! By the way, the Bravo Zulu section took the place of the "Old Pro Club." If we ever change back, LT Lagan will be listed as a plank owner. —Ed.

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request. Address: *APPROACH* Editor, Naval Safety Center, NAS Norfolk, VA 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

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Naval aviators. How many are there?

(see the inside front cover story)